

REMARKS

The Office Action dated December 4, 2008 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-20 are now pending in this application. Claims 1-21 stand rejected. Claim 21 has been canceled.

The rejection of Claims 1-21 under 35 U.S.C. § 112, second paragraph, for being indefinite is respectfully traversed.

Applicants respectfully submit that the recitation “providing a means for wireless radio frequency communications between the PLC and a plurality of wireless devices” of Claim 1 is clearly described in the originally filed specification. For example, paragraph [0014] describes “several communication paths such as . . . remote PLC and a I/O wireless product to a control unit, or PLC to cellular network (and to the Internet).” Moreover, paragraph [0020] describes that “[w]ireless communications embedded in a PLC enables communication to other PLC products, additional PLC racks of modules, remote I/O, HMI systems or programming software.” Paragraph [0020] also describes a method that includes integrating “a Bluetooth transmitter/receiver in the main PLC rack (master PLC) and each expansion rack. The master PLC can then communicate to each slave Bluetooth device, transferring information between the devices.” Furthermore, paragraph [0024] describes Figure 4, including that “if one of the main racks 46 can act as the access point, each component, such as the remote rack 50 and remote I/O 54, can communicate directly to the PLC main rack 46.” Accordingly, Applicants respectfully submit that Claim 1 is clearly described in the specification in accordance with the requirements of Section 112.

Claims 2-6 depend from independent Claim 1. When the recitations of Claims 2-6 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-6 likewise meet the requirements of Section 112.

Claims 7 and 15 each include a recitation similar to that of Claim 1 above. Accordingly, Applicants respectfully submit that each of Claims 7 and 15 is clearly described in the specification in accordance with the requirements of Section 112.

Claim 8 depends from independent Claim 7. When the recitations of Claim 8 are considered in combination with the recitations of Claim 7, Applicants submit that dependent Claim 8 likewise meets the requirements of Section 112.

Claims 16-20 depend from independent Claim 15. When the recitations of Claims 16-20 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claims 16-20 likewise meet the requirements of Section 112.

Claim 9 has been amended to recite "PLC configured to communicate with at least one controlled input/output module installed in a remote rack using said transmitter/receiver." As discussed above with regards to Claim 1, paragraph [0020] describes that "[w]ireless communications embedded in a PLC enables communication to other PLC products, additional PLC racks of modules, remote I/O, HMI systems or programming software." Accordingly, Applicants respectfully submit that Claim 9 is clearly described in the specification in accordance with the requirements of Section 112.

Claims 10-14 and 21 depend from independent Claim 9. When the recitations of Claims 10-14 and 21 are considered in combination with the recitations of Claim 9, Applicants submit that dependent Claims 10-14 and 21 likewise meet the requirements of Section 112.

For at least the reasons set forth above, Applicants respectfully request that the Section 112, second paragraph, rejection of Claims 1-21 be withdrawn.

The rejection of Claims 1-21 under 35 U.S.C. § 103(a) as being unpatentable over Applicants' Admitted Prior Art (hereinafter referred to as "AAPA") in view of U.S. Patent 7,058,040 to Schmidt (hereinafter referred to as "Schmidt") is respectfully traversed.

Initially, Applicants respectfully submit that neither AAPA nor Schmidt, considered alone or in combination, describes or suggests the claimed invention. For example, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC that includes a PLC module bus, a CPU, and a means for wireless radio frequency communication between the PLC and a plurality of wireless devices, wherein the CPU is directly coupled to the means for wireless radio frequency communication such that the CPU and means for wireless radio frequency communication do not communicate with each other over a PLC module bus. Rather, AAPA distinctly describes that communication between a CPU and a wireless communication module occurs through a PLC module bus. The Examiner has provided only a broad assertion that it would be obvious to directly couple the CPU and means for wireless radio frequency communication without providing any support for such an assertion as required by Section 103. Obviousness rejections must be supported with “articulated reasoning with some rational underpinning to support the conclusion of obviousness.” See KSR International Co. v. Teleflex, Inc., 127 S. Ct. 1727 at 1740-41, 82 USPQ2d at 1396, citing In re Kahn, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). The present rejection does not appear to meet this standard as it reflects no articulated reasoning why the independent or dependent claims are believed to be obvious, but rather is stated in the form of a conclusion of obviousness. Applicants accordingly request specific explanation and articulation regarding the reasoning and rational underpinning for any obviousness rejection of the claims, or request that the rejection be withdrawn. It is not believed that adequate reasons why the presently claimed invention is believed to be obvious have been provided on the present record.

Moreover, if art “teaches away” from a claimed invention, such a teaching supports the nonobviousness of the invention. See U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. Specifically, Applicants respectfully submit AAPA directly

teaches away from the recitation that the CPU and means for wireless radio frequency communication do not communicate with each other over a PLC module bus as recited in Claim 1. Specifically, AAPA *requires* that communication between a CPU and a wireless communication module occurs through a PLC module bus. As such, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests “operationally coupling the means for wireless radio frequency communications to the CPU, the CPU is mounted on a backplane of a rack such that the means and the CPU communicate without using the PLC module bus” as recited in Claim 1, or “a transmitter/receiver mounted on said CPU card, said transmitter/receiver operationally coupled to said CPU to communicate therebetween without using said module bus” as recited in Claim 9. Accordingly, Applicants respectfully submit that the cited art as a whole teaches away from the use of a transmitter/receiver directly coupled to a CPU in order to avoid communication therebetween via a PLC module bus as recited.

Furthermore, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC that includes a PLC module bus for communicating data between a PLC module and a CPU, and a transmitter/receiver directly coupled to the CPU such that communication between the CPU and the transmitter/receiver does not use the PLC module bus. In addition, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests that the transmitter/receiver facilitates communication between the PLC and at least one controlled input/output module installed in a remote rack.

AAPA describes a programmable logic controller (PLC) wireless communication system (10) including a backplane (12) and a central processing unit (CPU) card (14) mounted thereon. A CPU is mounted on the CPU card (14). Backplane (12) includes a plurality of module connectors (16) which accept modules such as a wireless communication module (18). Module connectors (16) communicate with the CPU via a PLC module bus. During normal operation, the CPU sends information to be wirelessly communicated across the PLC module bus to wireless communication module (18). Additionally, information that is received by wireless communication module (18) is sent by wireless communication module (18) across the PLC module bus to the CPU.

Schmidt describes a multi-mode wireless communicator device (100) that includes a plurality of radio frequency circuits including a cellular radio core (110), and a plurality of short-range wireless transceiver cores (130) such as Bluetooth cores and/or 802.11 cores. When in use, the device (100) automatically detects a suitable radio frequency circuit to use for communication. For example, when during an activity a user disconnects from a wired local area network cable such as an Ethernet cable, the device (100) initiates a short-range connection using, for example, a Bluetooth connection in order to continue the activity. When the user moves out of range of such a short-range connection, the device (100) initiates a longer-range connection using, for example, a cellular telephone connection in order to continue the activity. When the user re-enters a zone suitable for use of a different short-range connection, such as a 802.11 connection, the device (100) initiates such a connection in order to continue the activity. During the transitions between connection types, the device (100) automatically powers down unused radio frequency circuits.

Claim 1 recites a method for manufacturing a programmable logic controller (PLC), including “providing a central processing unit (CPU) configured for a PLC including a PLC module bus for coupling at least one PLC module to the CPU; providing a means for wireless radio frequency communications between the PLC and a plurality of remote devices; and operationally coupling the means for wireless radio frequency communications to the CPU, the CPU mounted on a backplane of a rack such that the means and the CPU communicate without using the PLC module bus.”

Neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a method for manufacturing a programmable logic controller (PLC), as recited in Claim 1. More specifically, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests operationally coupling a means for wireless radio frequency communications to a CPU, wherein the CPU is mounted on a backplane of a rack such that the means for wireless radio frequency communications and the CPU communicate without using a PLC module bus provided within the PLC. Rather, AAPA describes a CPU and a wireless communication module that communicate across a PLC module bus, and Schmidt

describes a multi-mode wireless communicator device that automatically switches to a suitable connection type in order to continue an activity while a user is mobile.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over AAPA in view of Schmidt.

Claims 2-6 depend from independent Claim 1. When the recitations of Claims 2-6 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-6 likewise are patentable over AAPA in view of Schmidt.

Claim 7 recites a method for communicating, including “providing a plurality of wireless communication devices; sending wireless messages from the plurality of wireless communication devices to a programmable logic controller (PLC) having a central processing unit (CPU) and a PLC module bus for coupling at least one PLC module to the CPU; and operationally coupling a means for wireless radio frequency communications to the CPU, wherein the CPU is mounted on a backplane of a rack, wherein the means for wireless radio frequency communications and the CPU communicate without using the PLC module bus.”

Neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a method for communicating, as recited in Claim 7. More specifically, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests sending wireless messages from a plurality of wireless communication devices to a programmable logic controller (PLC) having a CPU, and a PLC module bus, and operationally coupling a means for wireless radio frequency communications to the CPU, wherein the CPU is mounted on a backplane of a rack such that the means for wireless radio frequency communications and the CPU communicate without using the PLC module bus. Rather, AAPA describes a CPU and a wireless communication module that communicate across a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that automatically switches to a suitable connection type in order to continue an activity while a user is mobile.

Accordingly, for at least the reasons set forth above, Claim 7 is submitted to be patentable over AAPA in view of Schmidt.

Claim 8 depends from independent Claim 7. When the recitations of Claim 8 are considered in combination with the recitations of Claim 7, Applicants submit that dependent Claim 8 likewise is patentable over AAPA in view of Schmidt.

Claim 9 recites a Programmable Logic Controller (PLC) that includes “a backplane comprising at least one module connector and a module bus; a central processing unit (CPU) card mounted on said backplane; and a transmitter/receiver mounted on said CPU card, said transmitter/receiver operationally coupled to said CPU to communicate therebetween without using said module bus, wherein said CPU is mounted on said backplane via said CPU card, said PLC configured to communicate with at least one controlled input/output module installed in a remote rack using said transmitter/receiver.”

Neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a programmable logic controller (PLC), as recited in Claim 9. More specifically, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC that includes a backplane including a module bus, a CPU card mounted on the backplane, and a transmitter/receiver operationally coupled to the CPU and configured to communicate with the CPU without using the module bus. Moreover, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC that is configured to communicate with at least one controlled input/output module installed in a remote rack using the transmitter/receiver. Rather, AAPA describes a CPU and a wireless communication module that communicate across a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that automatically switches to a suitable connection type in order to continue an activity while a user is mobile.

Applicants respectfully traverse the assertion on page 5 of the Office Action that the “Bluetooth device 100-fig.2A of Schmidt mounted on the CPU-fig.1 of the APA could be configured in a rack that includes a power supply, a CPU board, and a controlled input/output module.” Applicants respectfully submit that Schmidt does not describe, suggest, or even

mention the use of the device described in Schmidt in conjunction with a PLC. Rather, as described above, Schmidt describes a multi-mode wireless communicator device that includes a plurality of radio frequency circuits such that, when in use between a variety of communication environments, the device automatically detects a suitable radio frequency circuit to use for communication.

Accordingly, for at least the reasons set forth above, Claim 9 is submitted to be patentable over AAPA in view of Schmidt.

Claim 21 has been canceled. Claims 10-14 depend from independent Claim 9. When the recitations of Claims 10-14 are considered in combination with the recitations of Claim 9, Applicants submit that dependent Claims 10-14 likewise are patentable over AAPA in view of Schmidt.

Claim 15 recites an apparatus including "a processor; a radio frequency receiver operationally coupled to said processor; a radio frequency transmitter operationally coupled to said processor, said transmitter is configured to send a wireless message to a programmable logic controller (PLC) having a central processing unit (CPU) and a PLC module bus for coupling at least one PLC module to the CPU; and means for wireless radio frequency communications operationally coupled to the CPU, wherein the CPU is mounted on a backplane of a rack, wherein the means and the CPU communicate without using the PLC module bus, said PLC configured to communicate with said processor and a plurality of remote wireless devices."

Neither AAPA nor Schmidt, considered alone or in combination, describes or suggests an apparatus, as recited in Claim 15. More specifically, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a means for wireless radio frequency communications operationally coupled to a CPU, wherein the means and the CPU communicate without using a PLC module bus. Rather, AAPA describes a CPU and a wireless communication module that communicate across a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that automatically switches to a suitable connection type in order to continue an activity while a user is mobile.

Accordingly, for at least the reasons set forth above, Claim 15 is submitted to be patentable over AAPA in view of Schmidt.

Claims 16-20 depend from independent Claim 15. When the recitations of Claims 16-20 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claims 16-20 likewise are patentable over AAPA in view of Schmidt.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1-21 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Respectfully submitted,



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